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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/720,617

11/24/2003

David M. Lowe

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09/28/2005

EXAMINER

HAILEY, PATRICIA L

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ART UNIT

PAPER NUMBER

1755

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/720,617

Applicant(s)

LOWE ET AL.

Examiner

Patricia L. Hailey

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 22-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 15, 2005, has been entered.

In Applicants' submission, claims 1 and 11 have been amended, and new claim 31 has been added.

Claims 1-31 are now pending in this application.

***Election/Restrictions***

2. Claims 22-30 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected process for selectively removing C<sub>2</sub> to C<sub>4</sub> alkynes or diolefins from a feedstock also containing olefins, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 14, 2004.

Claims 1-21 and 31 are now under consideration by the Examiner.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. *Claims 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

Claim 16 is indefinite for lacking antecedent basis for the phrase "rhodium compound". Claim 11, from which claim 16 depends, has been amended to recite the phrase "rhodium nitrate" instead of "rhodium compound".

Claims 17 and 18 are indefinite for failing to further limit claim 11, from which these claims depend. The limitations of both claims 17 and 18 are now present in claim 11 as currently amended (i.e., the phrases "indium nitrate or indium formate" and "alumina, zirconia, or ceria-alumina").

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
8. *Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moser et al. (U. S. Patent No. 6,514,904).*

Moser et al. teach an alumina (col. 1, line 3 to col. 2, line 48) catalyst with a platinum group metal component (e.g., rhodium), incorporated therein via coprecipitation, ion exchange, or impregnation, using salts such as rhodium nitrate (col. 5, lines 39-40). See col. 5, lines 3-57 of Moser et al., especially lines 14-20, which discloses a platinum group component mass percentage range of about 0.01 to about 2%.

Moser et al. also disclose that the catalyst may contain optional modifiers such as indium, in amounts ranging from about 0.01 to about 5 mass %. See col. 6, lines 55-67 of

Moser et al., which also discloses that the optional modifiers may be incorporated either during or after the preparation of the carrier material (i.e., alumina), or before, during or after the incorporation of the other catalyst components.

Because Moser et al. teach mass percentage ranges that read upon those respectively claimed, one of ordinary skill in the art would easily determine via known mathematic techniques that the molar ratios of platinum group component (e.g., rhodium), to modifier (e.g., indium) would read upon that respectively claimed.

In addition to the aforementioned preparation techniques, calcination and reduction steps are also employed. Calcination can be performed preferably before incorporation of any metals into the support, but also can be performed at temperatures ranging from about 370°C to about 600°C. See col. 7, lines 16-39 of Moser et al.

The reduction step can be performed in a substantially water-free environment, and in the presence of gases such as hydrogen, nitrogen, or carbon monoxide, at temperatures ranging from about 315°C to about 650°C. See col. 8, lines 6-30 of Moser et al.

Moser et al. do not teach the exact percentage ranges for rhodium and indium, as recited in the instant claims. However, the percentage ranges taught by Moser et al. either are within or overlap the percentage ranges respectively recited in the instant claims.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping

portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. In re Malagari, 182 U.S.P.Q. 549.

Further, where claimed ranges "overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists." In re Wertheim, 541 F.2d 257, 191 U.S.P.Q. 90 (CCPA 1976).

9. *Claims 1-15, 17-21, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson et al. (U. S. Patent No. 4,522,935).*

Robinson et al. teach a catalyst comprising a platinum group component, an indium component, and a porous support material, wherein the atomic ratio of indium to platinum group component is more than about 1.14. See col. 2, lines 26-35 of Robinson et al. Although this ratio is the reverse of that recited in Applicants' claims, one skilled in the art would easily deduce that inverting the atomic ratio of Robinson et al. would result in a ratio comparable to that claimed by Applicants.

The platinum group component is present in an amount ranging from about 0.01 to about 5 wt. %, and the indium component is present in an amount ranging from about 0.01 to about 15 wt. %. See col. 3, lines 5-14 of Robinson et al. Examples of the platinum group component include rhodium. See col. 4, lines 20-34 of Robinson et al.

Both the platinum group component and the indium component may be incorporated into the support material via cogelation or coprecipitation with the support material, or by ion exchange or impregnation of the support material. With the indium component, compounds such as indium chloride or indium nitrate may be

employed as impregnating solutions. See col. 4, lines 35-52 and col. 5, lines 10-46 of Robinson et al.

Examples of the support material include refractory oxides such as alumina and zirconium dioxide (zirconia). See col. 6, line 4 to col. 7, line 2 of Robinson et al.

In addition to the aforementioned methods of combining the catalyst components with the support material, techniques such as calcination and reduction are employed. Calcination temperatures range from about 700°F to about 1100°F (371.1°C to 593.3°C); reduction is performed under dry hydrogen at conditions including a temperature of about 400°F to about 1200°F (204.4°C to 648.8°C). See col. 7, line 50 to col. 8, line 19 of Robinson et al.

Robinson et al. do not teach the exact percentage ranges for rhodium and indium, as recited in the instant claims. However, the percentage ranges taught by Robinson et al. either are within or overlap the percentage ranges respectively recited in the instant claims.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. In re Malagari, 182 U.S.P.Q. 549.

Further, where claimed ranges “overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists.” In re Wertheim, 541 F.2d 257, 191 U.S.P.Q. 90 (CCPA 1976).



10. *Claims 11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moser et al. (U. S. Patent No. 6,514,904) in view of Robinson et al. (U. S. Patent No. 4,522,935).*

Both Moser et al. and Robinson et al. are relied upon for their teachings with respect to claims 1-10 and 31. However, while Moser et al. disclose the employment of rhodium nitrate (col. 5, lines 39-40) in preparing Patentees' catalyst, as well as the feasibility in employing optional modifiers such as indium (col. 6, lines 55-67), Moser et al. do not disclose the employment of indium formate or indium nitrate as sources for the indium compound.

Robinson et al. is relied upon to disclose the employment of indium nitrate. See col. 4, lines 35-52 and col. 5, lines 10-46 of Robinson et al.

Because the catalysts of both Moser et al. and Robinson et al. are suitable for catalytic reforming of gasoline-range hydrocarbons, as well as other processes such as alkylation, dealkylation, transalkylation, etc., motivation to combine the references is deemed proper. See col. 8, lines 42-47 of Moser et al., and col. 8, lines 33-35 and col. 9, lines 27-32 of Robinson et al.

It would have been obvious to one skilled in the art at the time the invention was made to modify the teachings of Moser et al. by incorporating therein indium nitrate as a source for indium as a modifier, because combining two or more materials disclosed by the prior art for the same purpose to form a third material that is to be used for the

same purpose has been held to be a prima facie case of obviousness, see In re Kerkhoven, 205 U.S.P.Q. 1069.

### *Response to Arguments*

Although the references cited in the above rejection have previously been cited, the above rejections are applied in view of Applicants' amendments to claims 1 and 11.

Although the cited references do not teach a "specific combination of metals", as argued by Applicants, the references are considered to provide motivation to obtain Applicants' claimed "specific combination of metals", despite Applicants' amendments "to emphasize the particular components of the invention". The term "consisting essentially of" may include any unrecited ingredient which does not affect the basic and novel characteristics of the invention. In re Garner, 162 U.S.P.Q. 221 (CCPA 1969); in re De Lajarte, 143 U.S.P.Q. 256 (CCPA 1964); In re Janakirama-Rao, 137 U.S.P.Q. 893 (CCPA 1963); Ex parte Davis, 80 U.S.P.Q. 448 (PO BdPatApp 1949).

Further, for prima facie obviousness, the prior art need not specifically teach a claimed specific combination, but only to suggest said combination, or provide motivation to obtain said combination.

For these reasons, Applicants' arguments are not persuasive.

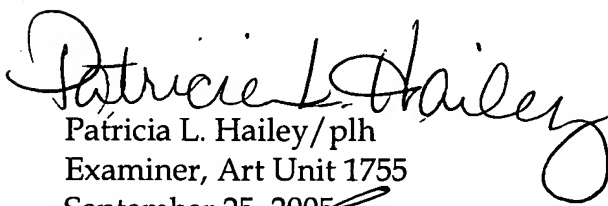
*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
September 25, 2005

  
J.A. LORENZO  
SUPERVISORY PATENT EXAMINER